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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/917,188	07/27/2001	Richard A. Holl	58035-012100	9623

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EXAMINER

TRA, TUYEN Q

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 06/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/917,188

Applicant(s)

HOLL ET AL.

Examiner

Tuyen Q Tra

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 March 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-79 is/are pending in the application.
- 4a) Of the above claim(s) 40-79 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,6-30 and 32-34 is/are rejected.
- 7) ☒ Claim(s) 2-5,31 and 35-39 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 July 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5,7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restriction

Applicant's election with traverse of Group II, in Pager No. 11 is acknowledged. The traversal is on the ground(s) that Groups I and II are neither independent nor distinct and claims 1-79 should be examined together in the same application. This is not found persuasive because Groups I and II are patentably independent and distinct. Unpatentability of Group I invention would not necessarily imply unpatentability of the Group II invention and otherwise. Groups I and II have acquired a separate status in the art as shown by their different classification. Group I, claims 1-39, drawn to an optical fiber switch required the presence of the fiber input/output as depicted in Fig. 3 and 15. Group II, claims 40-79, drawn to micromirror switch device as depicted in Fig. 2.

The requirement is still deemed proper and is therefore made Final.

Oath/Declaration

1. The declaration filed 07/27/01 is acceptable.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "140" has been used to designate both "electromagnetic on base plate 160 (Fig. 5)" and "thin film electromagnetic film on mirror 104". A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

3. The disclosure is objected to because of the following informalities: Different descriptions for the same parts. Reference number 140 has different descriptions as follows.

- Paragraph [0022], line 7, "a support base 140".
- Paragraph [0023], line 5, "a incident light beam 140".
- Paragraph [0029], line 4, "the thin film electromagnetic 140".

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 15 and 27 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

- Claim 15 recites "a hardness greater than Mohs Scale 8" which is not disclosed in specifications.

- Claim 27 recites "a sputtered winding on the core" which is not disclosed in specifications.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims **1, 6-8, 12** are rejected under 35 U.S.C. 102(b) as being anticipated by CMS Mikrosysteme GmbH (DE 29902348 U1 translation).

a) With respect to claim 1, CMS Mikrosysteme GmbH discloses a micro-optical movement device in Fig. 3 comprising of a micromirror (1) having a reflective top surface and a bottom surface; a support member (7, 8) having a member end (8); and the support member end (8) supporting the micromirror for controllable tilting relative to the member end.

b) With respect to claim 6, CMS Mikrosysteme GmbH further discloses wherein the bottom surface has a centrally positioned depression (5) and the end (8) engages in the depression (5).

c) With respect to claims 7 and 12, CMS Mikrosysteme GmbH further discloses wherein the end is a cone shape which is a pointed end (page 14, lines 19-20).

d) With respect to claim 8, CMS Mikrosysteme GmbH further discloses wherein the micromirror is able to pivot in any direction about an axis of the pointed end.

8. Claims **1, 9-11, 13, 14, 16, 17, 19-21, 23, 25, 28-30, 33** and **34** are rejected under 35 U.S.C. 102(b) as being anticipated by Lakerveld et al. (U.S. Patent No. 4,073,567).

a) With respect to claim 1, Lakerveld et al. discloses a micro-optical movement device in Fig. 2 and 3 comprising of a micromirror (3) having a reflective top surface and a bottom

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surface; a support member (17) having a member end (19); and the support member end (19) supporting the micromirror for controllable tilting relative to the member end.

- b) With respect to claim 9, Lakerveld et al. further discloses wherein the bottom surface of the mirror (3) has a centrally positioned slot (18), and the end (19) engages in the slot (18).
- c) With respect to claim 10, Lakerveld et al. further discloses wherein the end (19) is an elongate edge deposited in the slot (18) so that the micromirror can tilt about an axis of the slot.
- d) With respect to claims 11 and 13, Lakerveld et al. further discloses wherein the support member comprises a pin or needle 17 (see Fig. 3)
- e) With respect to claim 14, Lakerveld et al. further discloses wherein the end is made of sapphire (col.4, lines20-22).
- f) With respect to claims 16 and 17, Lakerveld et al. further discloses wherein the micromirror has a round disc shape; wherein the micromirror is symmetrical about its vertical axis (see Fig. 2).
- g) With respect to claims 19-21, Lakerveld et al. further discloses wherein a beam source oriented so that an incident beam therefrom hits a center of the reflective surface; wherein an incident beam therefrom hits the reflective surface at a location spaced from a center of the reflective surface; wherein their respective beams hit the reflective surface at different locations thereon.
- h) With respect to claim 23, Lakerveld et al. further discloses wherein the micromirror is tiltable about two, three or four equally spaced axes perpendicular to an axis of the member end.

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- i) With respect to claims 25, 28 and 29, Lakerveld et al. further discloses wherein an electromagnet (9-12) on a support surface below the bottom surface; wherein a magnet on the bottom surface (see Fig. 3).
- j) With respect to claim 30, Lakerveld et al. further discloses wherein the magnet (5, 7) is only on peripheral areas of the bottom surface (see Fig. 3).
- k) With respect to claims 33 and 34, Lakerveld et al. further discloses wherein the magnet is a permanent magnet or wherein the magnet is an electromagnet (col. 3, lines 48-50).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 18 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lakerveld et al. (U.S. Patent No. 4,073,567) as applied to claim 1 above.

Lakerveld et al. discloses a micro-optical movement device in Fig. 2 and 3 comprising of a micromirror (3) having a reflective top surface and a bottom surface; a support member (17) having a member end (19); and the support member end (19) supporting the micromirror for controllable tilting relative to the member end. However, Lakerveld et al. fails to teach wherein the micromirror has a diameter of generally between 100 and 200 microns or the micromirror is round and has a diameter of generally 200 micrometers.

Although the Lakerveld et al. structure does not teach the exact size of the mirror as being less than or equal to 200 μ m as that claimed by Applicant, the size differences are considered obvious design choices and are not patentable unless unobvious or unexpected results are obtained from these changes. Additionally, the Applicant has presented no discussion in the specification which convinces the Examiner that the particular size of mirror is anything more than one of numerous sizes a person of ordinary skill in the art would find obvious for the purpose of application choice. It appears that these changes produce no functional differences and therefore would have been obvious.

11. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lakerveld et al. (U.S. Patent No. 4,073,567), as applied to claim 21 above, in view of Solgaard et al. (U.S. 6,097,859).

Lakerveld et al. discloses a micro-optical movement device in Fig. 2 and 3 comprising of a micromirror (3) having a reflective top surface and a bottom surface; a support member (17) having a member end (19); and the support member end (19) supporting the micromirror for controllable tilting relative to the member end.

However, Lakerveld et al. fails to teach wherein each of the beam sources is an optical fiber. Within the same field of endeavor, Solgaard et al. teaches an optical switch with the beam source is an optical fiber 14a (see Fig. 1).

It would have been obvious, therefore, at the time the invention was made to a person having skill in the art to construct the optical switch such as disclosed by Lakerveld et al., with

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optical fiber beam source such as discloses by Solgaard et al., for purpose of directing the beam to the micromirror.

12. Claims 26 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lakerveld et al. (U.S. Patent No. 4,073,567) as applied to claims 25 and 28 above.

The applicant's claim do not distinguish over the Lakerveld et al. 's reference regardless of the process "sputtering" used to apply the electromagnet on the support surface as applicant has claimed, because the process limitation is not given patentable weight in claim drawn to structure. Note that a "product by process" claim is directed to the product per se, no matter how actually made, In re Hirao, 190 USPQ 15 at 17 (footnote 3). See also In re Brown, 173 USPQ 685; In re Luck, 177 USPQ 523; In re Fessmann, 180 USPQ 324; In re Avery, 186 USPQ 161; In re Wertheim, 191 USPQ 90 (209 USPQ 554 does not deal with this issue); and In re Marosi et al., 218 USPQ 289, all of which make it clear that it is the patentability of the final product per se which must be determined in a "product by process" claim, and not the patentability of the process, and that an old or obvious product produced by a new method is not patentable as a product, whether claimed in " product by process" claims or not. Note that applicant has the burden of proof in such cases, as the above caselaw makes clear. See also MPEP 706.03(e).

Allowable Subject Matter

13. Claims 2-5, 31 and 35-39 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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The reason for the indication of allowable subject matter is that (claim 2) liquid positioned relative to the bottom surface such that capillary force of the liquid holds the micromirror on the support member; (claim 31) the magnet is a mixture of zirconium, cobalt and nickel; (claim 35) the support member being a horizontal elongate member, the elongate member having an elongate edge defining the member end, the bottom surface having an elongate upwardly-disposed surface, and the elongate edge being disposed in the upwardly-disposed surface disclosed in the claims is not found in the prior art.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

a) Petersen (US Patent 4,317,611) discloses an optical device in Figure 2 with teaching of elongated support (32).

b) Ueda (US Patent 6,262,827 B1) discloses a micromirror device in Figure 12 with elongated support (100a) and magnetic (110) on bottom surface of the mirror (106).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuyen Tra whose telephone number is (703) 306-5712. The examiner can normally be reached on Monday to Thursday from 9:00am to 6:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps, can be reached on (703) 308-4883. The fax number for this Group is (703) 308-7722.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

tt

May 29, 2003


Hung Xuan Dang
Primary Examiner